
Space Weather Forecast

Issued on Sunday, 23 June 2024 at 13:28 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Further Moderate flares (R1-R2 radio blackouts) expected. Chance of isolated Strong flares (R3 radio blackouts). Chance of S1/Minor radiation storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate, with 2 Moderate class flares in the past 24 hours, peak flare was at 22/0630UTC from a region in the northwest. There are eight sunspot regions on the disc. Three large and complex regions approaching the western limb. Two moderately sized spots approaching centre disk, and three spots near the eastern limb.

No Earth directed coronal mass ejections have been observed in coronagraph imagery.

Solar Wind / Geomagnetic Activity: Solar winds were background followed by either a weak CH HSS connection or a weak transient during 23 Jun. Speeds remained slow ambient. Interplanetary Magnetic Field was weak initially, but rose to moderate after 23/0445 UTC. The north-south component followed a similar trend, becoming moderately negative for a period between 23/0600-0930UTC. Geomagnetic activity was Quiet (Kp 1-2) but became Unsettled to Active (Kp 3-4).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) has remained at background levels with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Further Moderate flares are expected, with a chance of isolated Strong flares, most likely from one of the large sunspots near the western limb, though these risks reducing with time.

Solar Wind / Geomagnetic Activity: No Earth directed coronal mass ejections are expected. Solar winds remain within normal background levels. Similar speeds are expected for much of, if not the entire forecast period. There is an outside chance of minor coronal hole enhancements day 1-3 (23-25 Jun).

Overall mainly Quiet to Unsettled geomagnetic activity is expected. There is a chance of Active intervals and a very slight chance of G1 Minor Storms days 1-3 (23-25 Jun), should there be any further coronal hole connections or weak transients.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background levels, but with a chance of exceeding the S1/Minor Storm threshold should any notable flares occur from any of the three large spots in the western hemisphere.

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Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	5	5	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	Yes	80	80	70	50
Very Active	R3 to R5 X	No	25	25	20	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	30	30	20	10
Very Active	≥ S3 *	No	5	5	2	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)